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undertake to stand, after thirty-five years of training, where Cassin stood at his death?" The all-worthy time-honored quartette has been rudely broken. Now only a triangle, Lawrence, Brewer and Baird, remains of the last generation of American ornithologists. Who shall lead opinion when they too are gathered to their fathers? A higher trust than we perhaps appreciate, is laid upon the few of us of this later day who pay devotion to the beautiful study of ornithology. It is no less than the keeping bright and untarnished,

and transmitting to our successors, the name and fame of the science that has absorbed such minds as those of Wilson, Nuttall, Audubon, Bonaparte and Cassin. May we prove worthy servitors, guarding with jealous care our trust, watchful that the vestal fires shall ever burn at the shrine where we worship with a clear and steady flame.

Ever yours, faithfully,

ELLIOTT COUES.

DR. J. G. COOPER,

Acad. Nat. Sciences,

San Francisco, Cal.

Some Observations on the Rufous-crowned Sparrow.

BY C. BARLOW.

THOSE who go afield after the first glories of spring have vanished, when the foxtail along the roadside and the short grass on the hills have taken on an uninviting appearance, have doubtless noticed that most of the birds have settled along the water courses, and that save for an occasional kingbird, lark sparrow and the like the parched hills appear deserted.

Yet my subject deals with a small, rather steep hillside, where from May to September the heat dances dizzily over the thin sage growth and where life to most of us would be intolerable. Here a small colony of rufous-crowned sparrows (*Aimophila ruficeps*) have contentedly established themselves, and they lead an altogether busy life searching along the old stone wall which separates the pasture from the road. Considerable travel passes along the road but it seems in nowise to disturb them and they are really a sociable colony.

How long the birds have frequented this sparsely-covered hill I do not know, but they were there to my knowledge to 1896 and perhaps have been there for decades. This particular hill possesses a decidedly scraggly growth of sage, and why it was chosen in preference to some heavily covered hill which might afford secure protection, is

best known to the birds themselves. Perhaps the stone wall mentioned and the adjacent road afford a generous food supply. It should be mentioned also that a small country schoolhouse lies just across the road, so, withal, this particular band of *Aimophila* cannot be termed as exclusive as we should expect individuals of this genus to be.

The population of this colony can only be speculated upon. A small series including a number of juveniles was collected here by Mr. Grinnell and myself in September, 1901. To be exact some eighteen specimens were taken within an area of two or three acres, and some interesting plumages were represented. Whether there had been an influx of birds from the surrounding hills or not I do not know, but on the same day other seemingly inviting sage hills seemed not to harbor a single sparrow. Thus I am inclined to believe that they are not uniformly distributed over this range of hills, even in the most inviting and suitable territory.

PUBLISHED DATA.

We are indebted to Mr. William Brewster for the first published account of the nidification of the rufous-crowned sparrow. In the *Bulletin of the Nuttall Ornithological Club* (II, p. 37, 1877) under the caption 'Two Undescribed

Nests of Californian Birds' he describes a nest found by Chas. A. Allen on July 10, 1875. It "contained three pure white eggs which measure .89 of an inch in length by .65 in breadth. . . . and the nest was placed on the ground under a bush." The locality is described as an open heathy tract on a mountain side.

Subsequent* to this Mr. Brewster published further observations on this species by Mr. Allen, dealing with the time of arrival, the song and general wariness of the bird. He states also that

GENERAL OBSERVATIONS.

My visits to the home of the rufous-crowned sparrow this year began on March 23 according to my note book. The day was bitterly cold with a north wind, and not conducive to bird investigations. At the colony I was greeted by a male on the stone wall and I approached to within fifteen feet. Then its mate came into view and both hopped about in the grass near the sage-brush, allowing me to come within ten feet of them. On going up the hill I saw two more pair but decided

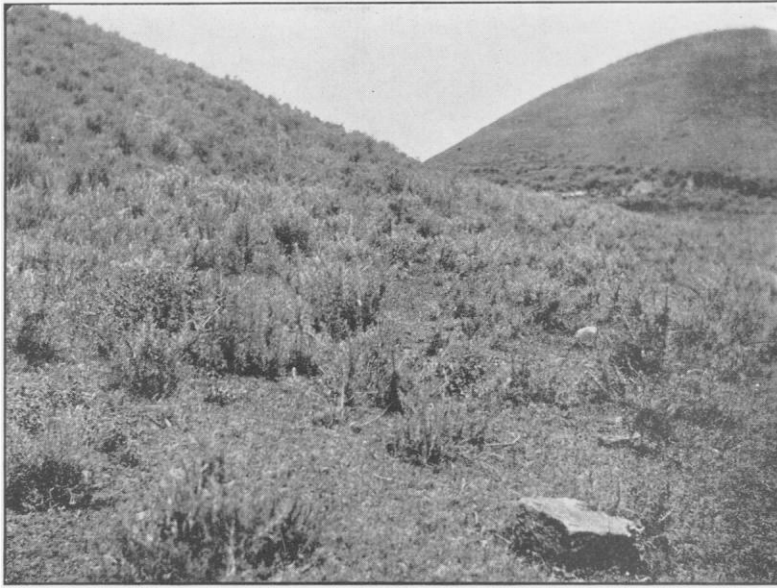


PHOTO BY BARLOW.

HAUNTS OF THE RUFOUS-CROWNED SPARROW.

the birds depart for the south before winter sets in. In the *Osprey* (II, p. 27 1897) L. P. Williams describes briefly the nesting of this species in San Bernardino Co., Cal., stating that the nests are built under grass tufts, and that four or five eggs are laid, which are "crystalline white" when blown. So far as I can learn this comprises all that has been published on the nesting and habits of the rufous-crowned sparrow.

they were not yet nesting. The presence of numerous *Zonotrichia* in the sage made a search for a nest impracticable. I had an excellent chance to hear and verify one of the songs of *Aimophila*. It was given frequently,—a weak song, well expressed by *te-a-te-tree-e-e*, the last note being as long as the three preceding ones. This particular song was not heard so often later in the season.

On March 30 a visit to the hillside failed to reveal a single bird, they hav-

**Bull N. O. Club*. IV, p. 47, 1879.

ing become very secretive. A tramp through the sage failed to flush any individuals. April 27 was destined to prove more fruitful of success, and I quote my notes for the trip: "We drove over to the sparrow district this morning. It was a beautiful day for bird-life. We both went over the hill and along the stone wall, and in the sage could be heard the shrill call note of the sparrow and occasionally its song. Apparently several pairs are breeding in the patch. Arkansas goldfinches were flitting and twittering about the hill and one flushed from a sage bush where I found its nest and four eggs in a crotch three feet up.

"We then beat back and forth at random in the sage, now and then catching a glimpse of a rufous crowned sparrow or hearing its song. But any attempt at watching one to its nest seemed a most improbable thing. At this season the birds are very secretive and while one can work up to within gun-shot the birds were ready to change positions at the least alarm. The males evidence some interest for although they would sit on a fence seventy-five yards away and sing with apparent nonchalance for five minutes, eventually they would flit across to the sage somewhere near the intruder and watch his movements. I was tiring of the rather monotonous beating through the sage when J—— excitedly called to me and told me of a nest and four 'white' eggs on the ground. I went over and looked in under a small sage where the nest was easily seen when you knew it was there!

"The nest was sunk flush in the ground, being built partly under a sage root, and contained four eggs with a very perceptible light bluish tinge. Upon blowing one egg was found infertile and the others were but slightly incubated. We sat down at a distance but not a sound came from the female, who had flushed and disappeared. After perhaps ten minutes of quiet watching the bird appeared up the hill

but was extremely wary. She flew past the bush and alighted, but would not go to the nest. Then she flew up the hill again, when I collected her. Dissection showed the set to be complete. Further search failed to reveal any other nests for the day.

"This sparrow has an alarm, *quirk, quirk, quirk*, very similar to the rock wren. It is uttered also as a spontaneous note at times. The real song has been likened to that of the lazuli bunting but I see little resemblance save in the general trilling style. The sparrow's note is much stronger, a combination of warble and trill which it would be quite useless to attempt to write. It seems to me quite distinct from other bird songs and is uttered indiscriminately either from a perch, from the sage, or when the bird is on the ground."

The nest mentioned was substantially built as may be seen from the illustration. It was composed outwardly of grass, grass roots, a few small twigs and fibers. The lining was almost entirely of horsehair. The outside diameter was six inches, the inside three inches. Depth inside, $1\frac{1}{2}$ inches; outside, three inches. The front or exposed rim of the nest was much thicker than the back. The eggs were four in number, possessing a slight bluish tinge both before and after blowing.

In this connection it may be interesting to mention that the eggs of this sparrow seem to be possessed of two types of coloration some sets being pure white, while others have the bluish tint. Four sets which are known to be in existence show the following coloration: Mr. Brewster's set of three eggs, he informs me, are pure white; a set collected by Mr. H. S. Gay in San Bernardino Co. and kindly loaned me for inspection, are pure crystalline white in color; a set collected by Mr. R. H. Beck in Monterey Co., Cal., June 25, 1894, is now in the National Museum collection. Dr. Wm. L. Ralph informs me that the eggs are "certainly of a light bluish color." The set collected

by myself also has the bluish tint. Just why this sparrow should lay two types of eggs is a problem.

In addition to the sets possessed by Mr. Brewster and the National Museum, and the one collected by myself, the following nesting dates may prove of interest: April 23, 1893, four fresh eggs, found by L. P. Williams, San

served; May 2, 1897, five eggs, destroyed by unknown cause; May 26, 1897, four eggs on point of hatching; June 1, 1899, three eggs badly incubated and not preserved.

FOOD.

Through the kindness of the Biological Survey I am enabled to give the results of the examination of twenty-two



NEST AND EGGS OF RUFOUS-CROWNED SPARROW.
(About $\frac{2}{3}$ natural size.)

Showing substantial outer rim on exposed side.

PHOTO BY BARLOW.

Bernardino Co., set not preserved. The following nests were discovered by Mr. Harold S. Gay in the same locality and embrace those mentioned by Mr. Williams in his article in the *Osprey*: May 1, 1896, four eggs which were found destroyed on visiting the nest two days later; May 3, 1896, four eggs, set pre-

served; May 2, 1897, five eggs, destroyed by unknown cause; May 26, 1897, four eggs on point of hatching; June 1, 1899, three eggs badly incubated and not preserved.

Through the kindness of the Biological Survey I am enabled to give the results of the examination of twenty-two

stomachs, which were made by Prof. F. E. L. Beal. In two stomachs collected by Prof. Beal on June 27, 1901, the average of vegetable matter was 97% and of animal matter 3%. In eighteen stomachs collected by Mr. Grinnell and myself on Sept. 22, 1901, the average of vegetable matter is 88.4% and of ani-

mal matter 11.6%; one stomach collected March 16, 1902, vegetable and animal matter each 50%; one stomach collected April 27, 1902, vegetable matter 6% and animal matter 94%. The food of the June specimens consisted of small oats, *Erodium*, grass seeds and Hymenoptera. Those taken in September had a more varied bill of fare, consisting of crickets, carabid beetles, ants, grasshoppers, Hymenoptera and one olive scale, chickweed, *Polygonum*, *Amaranthus*, *Erodium* and oats. Grasshoppers in the animal and wild oats in the vegetable food seem to largely predominate. One March stomach contained Hymenoptera and Hemiptera and unidentified seeds, while the April specimen showed Chrysomelid and

Lampyrid beetles, Jassids, Arachnids, oats and *Erodium*.

I believe the rufous-crowned sparrow to be resident in this locality, since I have collected them in September, November and March, and the abundance of food and mild winters would seem to suggest no necessity for migration. Despite the natural secretiveness of the species in breeding season I do not consider it wary at other seasons and its acquaintance may be easily cultivated. To my fancy the very solitude which this bird seeks makes it the more interesting to the ornithologist and I shall look forward to further investigation of its sage brush home with renewed interest.

The Redwood Belt of Northwestern California.

I. FAUNAL PECULIARITIES OF THE REGION.

BY WALTER K. FISHER.

THE northwest coast district of the United States is possessed of a peculiar interest ornithologically. It is a region of heavy rainfall and of dark forests, and not a few pale interior birds are here presented by more deeply colored races. For the student of geographical distribution it has also many attractions because such unusual conditions prevail. Combined with a long summer of comparatively low temperature for the latitude are frequent fogs and not a few rains. The proximity to the ocean has much to do with the equable climate, but the summer fogs and light rains more than anything perhaps are responsible for the temperature, since they greatly reduce the number of sunny days, and thus pull down very decidedly the sum total of heat for the season of reproduction. To the peculiar summer fogs and rain are also due the heavy forests and rank vegetation, and to both the fogs and forests the dark races of birds.

Without thinking one is prone to connect the intensity of coloring in the birds of this particular region directly with the heavy rainfall, as if the moisture itself in some manner acted to produce these deeper tints. In the same way the lack of rain in desert regions is sometimes invoked to explain the faded coloration of many of the desert-loving species. But, omitting the effect of the different rates of abrasion in humid and dry climate, the intensity of *color* itself seems more directly due to the proportion of cloudy days, irrespective of moisture, during the season of reproduction. With cloudy days is ranked also the semi-daylight of dark forests. Many of the humid belt birds spend their winters in the drier interior when the rainfall is heaviest in their breeding areas. They would therefore lose in a large degree any 'benefit' that the rain itself might confer, granting it possessed any sovereign influence. We must remember that the total rainfall of the Transition of the central Sierra Nevada exceeds that of Eureka in the so-called humid belt. But the rainstorms of the Sierra are very heavy, of short duration,